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25 June 73
(DATE)

MEMORANDUM FOR THE RECORD

SUBJECT: Opinion Request - Chemical Catalysis (S&T Bilateral)
(list of US project coordinators; Soviet proposal for sub-topic 3 "Study of Selected Catalytic Systems" ; Soviet proposal sub topic 4 "Life Support Systems"
Attached is self-explanatory material from the Department of State.
May we have your opinion by ??.

Please state degree of interest and whether we will receive requirements.

(IMAGE)

COMMENTS: This is forwarded for your information unless you wish to comment.
If so, please inform me by phone, that I may expect written comments.
Thanks. Nomie

Ref:

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(for OSR)

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NAVY: ☒

"

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DIA: ☒

GSD: ☒

AF has no obj to US proposal as presented but would ask for the opportunity to review the Soviet policy + then comment on both.

Forwarded 17 Sept 73

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CL BY: 007622

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State Dept., USAF declassification & release instructions on file

CHEMICAL CATALYSIS

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6/27
no time
limit -
CIA only - for
comments -
info to
insert
Nomi.

Attached are:

- a) listing of US project coordinators in Chemical Catalysis under S & T
- b) Soviet proposal for sub topic 3 "Study of Selected Catalytic Systems"
- c) Soviet proposal sub topic 4 "Life Support Systems" Prof. Weis the project chairman for that sub topic is currently in Soviet Un.

I am giving them to you for info of your analysts and any comments. But since The Advisory Group commented in

depth on 'Chemical Catalysis'
last November no opinion
from them ~~appears~~ required
on the sub topics.


Ray

U.S.-U.S.S.R. Joint Commission
on Scientific and Technical Cooperation

U.S. WORKING GROUP ON CHEMICAL CATALYSIS

Chairman

Dr. John D. Baldeschweiler
Chemistry Branch, NCI
National Institutes of Health
Building 37, Room 3D13
Bethesda, Maryland 20014

301-496/2885

Project Coordinators

1. Catalysis by Coordination Complexes
and Organometallic Compounds

Dr. Jack Halpern
Department of Chemistry
The University of Chicago
5747 Ellis Avenue
Chicago, Illinois 60637

312-753/8271

2. Catalytic Reactor Modeling

Dr. James Carberry
Department of Chemical Engineering
University of Notre Dame
Notre Dame, Indiana 46556

219-283/6156

3. In-depth Study of Selected
Catalytic Systems

Dr. W. Keith Hall
Department of Chemistry
University of Wisconsin
Milwaukee, Wisconsin 53201

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4. Life Support Systems

Dr. Alvin Weiss
Department of Chemical Engineering
Worcester Polytechnic Institute
Worcester, Massachusetts 01609

617-753/1411
ext. 380

5. Environmental Control

Dr. Vladimir Haensel
Vice President and
Director of Research
Universal Oil Products Company
30 Algonquin Road
Des Plaines, Illinois 60016

312-391/3131

DEPARTMENT OF STATE
DIVISION OF LANGUAGE SERVICES

(TRANSLATION)

LS NO. 36058
T-131/R-XVIII
Russian

Dr. V. K. Hall
Gulf Research and Development Co.
Mellon Institute
Pittsburg, U.S.A.

May 15, 1973

Dear Dr. Hall:

I apologize for the delay in answering your letter of January 30, 1973, but I decided to wait for the final decision of the Joint Commission USSR-USA. Now, finally, this decision has been made and, upon consultation with Prof. Boreskov, I have set up a plan for possible work on Subject III. This plan is enclosed. It should be regarded as optimal. Essentially, it follows the lines of the exchange of views that we had between us. It lists the possible investigation subjects for 1973, and names the possible Soviet participants. Please let me know what you think about this plan. Which are the subjects you feel should take priority in 1973?

I feel it would be expedient if you and another American scientist could come to the U.S.S.R. to reach final agreement on the shape of the joint work on Subject III. After this, somewhat later, a group of Soviet scientists at the managerial level could visit the U.S. to acquaint themselves with the work of American scientists, after which

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we could proceed to send younger scientists for training. Please let me know what you think about this. We will be glad to see you in the U.S.S.R. at any previously agreed time, except the summer holidays (July and August).

Best regards, yours

[s] O. V. Krylov

SECTION III

Detailed study of selected catalytic systems

(plan for 1973)

1. Total and partial oxydation of propylene on molybdates of transition metals.

Preparation of stoichiometric molybdates and enriched by one of the components and investigation of their catalytic properties and of the mechanism of catalytic action by the use of radiospectroscopic, optical, kinetic and calorimetric methods.

Institute of Catalysis Siberian Division of the USSR Academy of Sciences - G.K. Borekov.

Investigation of the zonal structure of transition and nontransition metal molybdates by optical and ESR methods.

Institute of Chemical Physics, USSR Academy of Sciences.

O.V. Krylov, L.Ya. Margolin, K.N. Spiridonov. Azerbaijan Petroleum Institute.

Investigation of the kinetics of propylene oxydation on molybdates. Physico-chemical Karpov Institute - A.I. Gelbstein.

Investigation of acrolein oxydation on transition metal molybdates.

Institute of Physical Chemistry Academy of Sciences of the Ukrainian SSR - Ya. B. Gorokhovatski.

2. Dehydrogenation of butane into butadiene and
of ethylbenzene into styrol on ferritic spinels.

Investigation of the role of individual components in
systems based on iron and chromium and of the influence of
the reaction environment on their catalytic activity.

Institute of Catalysis, Siberian Division of the USSR
Academy of Sciences - R.A. Bujanov.

3. Total and partial oxydation of hydrocarbons on
supported oxides of transition metals and on
solid solutions of oxides.

Investigation of the formation and properties of radi-
cals O_2^- and O^- on systems Co/MgO , Co/Al_2O_3 ,
 V/MgO , V/Al_2O_3 , Mo/MgO , Mo/Al_2O_3 .

Institute of Organic Chemistry, USSR Academy of Sciences
- V.B. Kazanski, V.A. Shvets. Institute of Chemical Physics,
USSR Academy of Sciences - O.V. Krylov, K.N. Spiridonov.

Investigation of shortlived surface complexes with
olefins and paraffins by high resolution NMR spectrometry.
Institute of Organic Chemistry, USSR Academy of Sciences -
V.B. Kazanski.

Investigation of the mechanism of butene oxydation on
 V/Al_2O_3 and VPO_4 catalysts by IR spectroscop-
ical methods. Institute of Chemical Physics, USSR Academy of
Sciences - O.V. Krylov, A.A. Kadushin. Institute of Physical
Chemistry, Academy of Sciences of the Ukrainian SSR - Ya.B.
Gorokhovatukh, B.V. Geroj.

4. Total and partial oxydation of ethylene on silver.

A study of oxygen diffusion through a silver membrane catalyst and of the influence of ethylene and ethylene oxide adsorption on the diffusion of oxygen. Institute of Petrochemical Synthesis, USSR Academy of Sciences - V.S.Smirnov. University of Peoples Friendship - V.M.Griaznov.

5. Hydrogenation on pure metals and alloys

A study of hydrogen and oxygen adsorption and of their interaction on nickel single crystals by the LEED and Auger-spectroscopy methods. Institute of Catalysis, Siberian Division of the USSR Academy of Sciences - G.K.Borcenkov, V.I. Savchenko.

A study of hydrogenation on VIII-th group metals and on their alloys with IB group metals, including metals prepared in ultrahigh vacuum. Physico-chemical Karpov Institute - A.I.Gelbstein.

Investigation of the adsorption of hydrogen and of its interaction with NO and CO₂ on platinum group metals, purified in ultrahigh vacuum. A study of hydrogen atom recombination on IB group metals. Institute of Chemical Physics, USSR Academy of Sciences - I.I.Tretiakov.

Investigation of the hydrogenation of dienes and of dehydrogenation of olefins on membrane palladium and palladium - nickel catalysts. Institute of Petrochemical Synthesis, USSR Academy of Sciences - V.S.Smirnov. University of Peoples

6. Investigation of the isomerization of butene^es on selected oxide catalysts with various acid-base properties.

A study of the acidic properties of oxide surfaces by adsorption and IR spectroscopy. A study of the catalytic activity of selected oxides in isomerization of butenes. Moscow University - K.V. Topchieva. Institute of Catalysis, Siberian Division of the USSR Academy of Sciences.

Investigation of the interaction of butene-1 with acid and base centres by high resolution NMR. Institute of Organic Chemistry, USSR Academy of Sciences - V.B. Kazanski.

Quantum-chemical calculations of olefin complexes with acidic and base centres.

Institute of Organic Chemistry, USSR Academy of Sciences - G.M. Zhidomirov.

7. Investigation of the reactions of hydrocarbons on zeolites.

A complex study of the acidic properties of zeolites, decationated and containing VIII group metals, by IR spectroscopy, NMR, by titration with acid indicators and by hydrogen - deuterium exchange with hydrocarbons ^{for} with the purpose of establishing a relation between thermodynamic properties, kinetic constants, acidity and catalytic action of zeolites in the reactions of isomerization and cracking of hydrocarbons.

Institute of Catalysis, Siberian Division of the USSR
Academy of Sciences - K.G.Tone.

A study of isomerization, disproportionation, hydro-
genation of hydrocarbons on zeolites of different types
and of the relation between catalytic activity and proper-
ties of zeolites by means of kinetic, isotopic, chromatog-
raphic, microcalorimetric and thermodesorption methods.

Institute of Organic Chemistry, USSR Academy of Sciences
- X.M.Minachev, G.V.Antoshin.

A study of the acidity of decationated zeolites of the
faujasite type prepared by direct synthesis, as well as by
dealumination, by high temperature desorption of ammonia.
Investigation of the relation between the energetic spect-
rum of acidity and catalytic activity in model reactions.

Moscow University - K.V.Topchieva.

OK

DEPARTMENT OF STATE
DIVISION OF LANGUAGE SERVICES

(TRANSLATION)

LS NO. 36031
T-127/R-XVIII
Russian

Prof. Alvin Weis
Worcester Polytechnical Institute
Worcester, Mass. 01609
USA

Dr. N.M. Sakharov
Academy of Sciences of the USSR
Institute of Chemical Physics
Moscow, 5/15/73

Dear Professor Weis:

Thank you for the information concerning your plans for research on synthesis of formose and proposals for a program of joint Soviet-American research in the use of catalysis in spacecraft life-support systems. We would be happy to work with American scientists in this area of research. The research plans of which you speak in the letter are very interesting. Along the same lines, I can tell you that in our Institute, in the Laboratory of Prof. O.V. Kvylov, we are planning to conduct the following research by June of 1974:

1. Use of kinetic methods and ultra-violet and nuclear magnetic resonance spectroscopy to study the nature of formaldehyde and carbohydrate complexes with Ca^{2+} ions, which are active in reactions of aldol condensation in basic solution.
2. Use of radioactive tracers to study the role of reactions of retroaldol fission in the process of condensation of formaldehyde into carbohydrates.

During your stay in Moscow we will work out your program more precisely, and will discuss the administrative side of our programs and related matters

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of mutual visits. If you have the time, in addition to the laboratory of Prof. O.V. Krylov, you can see research on the synthesis of formose, conducted in the Institute of Physical Chemistry of the Academy of Sciences of the USSR in Kiev.

Your proposed time of arrival (June of this year) is satisfactory, but it would be well if you could arrive before June 20, since after this date our summer vacations begin, and Prof. O.V. Krylov and I may not be in Moscow. If you cannot arrive before June 20, it would be better to carry over your visit into the Fall.

With my best regards, I am,

Sincerely yours,

[s] D.M. Sakharov

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USAF POSITION ON COMMUNIST BLOC VISITORS

Visitors: Proposal - Chemical Catalysis, S&T Bidateral

Project and Sponsor:

LGZ	AFSC	FTD	OTHER
8		8	

8. USAF also provides the following: The AF has no objection to the proposed ^{by} as presented, but would ask for the opportunity to review the Soviet ^{by} proposal, and then comment on ~~the~~ both.

Opinion # 50-3 Due 11 Jul 73

Passed to ILAGE 13 July 73

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